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| Notice of Allowability | Application No. | Applicant(s) | |
| | 09/973,904 | KWAK ET AL. | |
| | Examiner | Art Unit | |
| | Phuongchau Ba Nguyen | 2665 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. This communication is responsive to 10-19-1.
2. The allowed claim(s) is/are 1-28.
3. The drawings filed on _____ are accepted by the Examiner.
4. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some* c) None of the:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) hereto or 2) to Paper No./Mail Date _____.
 - (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date 3-28-5.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. Notice of References Cited (PTO-892)
2. Notice of Draftperson's Patent Drawing Review (PTO-948)
3. Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. Notice of Informal Patent Application (PTO-152)
6. Interview Summary (PTO-413),
Paper No./Mail Date 3-28-5.
7. Examiner's Amendment/Comment
8. Examiner's Statement of Reasons for Allowance
9. Other _____.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with Mr. Michael Misella on 3-28-5.
3. The application has been amended as follows:

Claim 22, line 1,
“23” had been changed to ---21---
4. The following changes to the drawings have been approved by the examiner and agreed upon by applicant: Figures 1 and 2 had been labeled as “PRIOR ART”. In order to avoid abandonment of the application, applicant must make these above agreed upon drawing changes.
5. The following is an examiner's statement of reasons for allowance:

Regarding claims 1-6, the prior art fails to teach or suggest an apparatus for indicating enablement of transmit diversity of primary common control physical channel in a CDMA (Narrow Band Time Division Duplexing Code Division Multiple Access)

mobile communication system, wherein a plurality of frames constituting a multiframe each include two subframes, each of said subframes including (i) a plurality of time slots each having data symbol fields scrambled with a given scrambling code and a midamble field indicating the given scrambling code, and (ii) a downlink pilot time slot having a synchronization code, intervening between first and second time slots of said plurality of time slots, wherein two adjacent frames make a frame pair, the apparatus indicating enablement of transmit diversity through at least two antennas by phase modulation of the synchronization codes in the downlink pilot time slots in each frame pair, the apparatus comprising "a transmit diversity enable/disable controller for storing a plurality of patterns each comprised of a plurality of different phase modulation angles to indicate enablement of the transmit diversity, and sequentially outputting the phase modulation angles according to the usage of the transmit diversity in a unit of the patterns," in combination with other limitations, as specified in the independent claim 1.

Regarding claims 7-10, the prior art fails to teach or suggest an apparatus for determining enablement/nonenablement of transmit diversity in CDMA mobile communication system, wherein a plurality of frames constituting a multiframe each include two subframes, each of said subframes including (i) a plurality of time slots each having data symbol fields scrambled with a given scrambling code and a midamble field indicating the given scrambling code, and (ii) a downlink pilot time slot having a synchronization code, intervening between first and second time slots of said plurality of time slots, wherein two adjacent frames make a frame pair, the apparatus determining enablement/nonenablement of transmit diversity depending on phase modulation

angles of the synchronization codes in the downlink pilot time slots in each frame pair, the apparatus comprising "a transmit diversity detector for storing a plurality of first patterns each comprised of a plurality of different first phase modulation angles to indicate enablement of the transmit diversity, storing a plurality of second patterns each comprised of a plurality of different second phase modulation angles to indicate nonenablement of the diversity transmission, said second patterns being different from the first patterns, and determining use/nonuse of the transmit diversity by comparing the phase modulation angles searched by the phase demodulator with the first and second phase modulation angles of the first and second patterns," in combination with other limitations, as specified in the independent claim 7.

Regarding claims 11-16 , the prior art fails to teach or suggest a method for indicating enablement of transmit diversity CDMA mobile communication system, wherein a plurality of frames constituting a multiframe each include two subframes, each of said subframes including (i) a plurality of time slots each having data symbol fields scrambled with a given scrambling code and a midamble field indicating the given scrambling code, and (ii) a downlink pilot time slot having a synchronization code, intervening between first and second time slots of said plurality of time slots, wherein two adjacent frames make a frame pair, the method indicating enablement of transmit diversity through at least two antennas by phase modulation of the synchronization codes in the downlink pilot time slots in each frame pair, the method comprising the steps of "storing a plurality of patterns each comprised of a plurality of different phase modulation angles to indicate enablement of the transmit diversity, and sequentially

outputting the phase modulation angles by the diversity transmission in a unit of the patterns," in combination with other limitations, as specified in the independent claim 11.

Regarding claims 17-20, the prior art fails to teach or suggest a method for determining enablement/nonenablement of transmit diversity in a CDMA mobile communication system, wherein a plurality of frames constituting a multiframe each include two subframes, each of said subframes including (i) a plurality of time slots each having data symbol fields scrambled with a given scrambling code and a midamble field indicating the given scrambling code, and (ii) a downlink pilot time slot having a synchronization code, intervening between first and second time slots of said plurality of time slots, wherein two adjacent frames make a frame pair, the method determining enablement/nonenablement of diversity transmission depending on phase modulation angles of the synchronization codes in the downlink pilot time slots in each frame pair, the method comprising the steps of "storing a plurality of first patterns each comprised of a plurality of different first phase modulation angles to indicate enablement of the transmit diversity, storing a plurality of second patterns each comprised of a plurality of different second phase modulation angles to indicate nonenablement of the transmit diversity, said second patterns being different from the first patterns, and determining use/nonuse of the transmit diversity by comparing the phase modulation angles searched by phase demodulation with the first and second phase modulation angles of the first and second patterns," in combination with other limitations, as specified in the independent claim 17.

Regarding claims 21-23, the prior art fails to teach or suggest an apparatus for transmitting a primary common control physical channel (P-CCPCH) signal using transmit diversity in a UTRAN for a CDMA mobile communication system, comprising "a downlink pilot time slot generator for outputting a downlink pilot time slot by phase modulating synchronization codes received in a unit of a predetermined number of chips with a plurality of different phase modulation angles for indicating enablement of the diversity transmission," in combination with other limitations, as specified in the independent claim 21.

Regarding claims 24-26, the prior art fails to teach or suggest a method for transmitting a primary common control physical channel (P-CCPCH) signal using transmit diversity from a UTRAN to a UE in a CDMA mobile communication system, comprising the steps of "generating a downlink pilot time slot by phase modulating synchronization codes received in a unit of a predetermined number of chips with a plurality of different phase modulation angles for indicating enablement of the diversity transmission," in combination with other limitations, as specified in the independent claim 24.

Regarding claim 27, the prior art fails to teach or suggest an apparatus for determining enablement/nonenablement of transmit diversity in a CDMA mobile communication system, wherein a plurality of frames constituting a multiframe each include two subframes, each of said subframes including (i) a plurality of time slots each having data symbol fields scrambled with a given scrambling code and a midamble field indicating the given scrambling code, and (ii) a downlink pilot time slot having a

synchronization code, intervening between first and second time slots of said plurality of time slots, wherein two adjacent frames make a frame pair, the apparatus determining enablement/nonenablement of transmit diversity depending on phase modulation angles of the synchronization codes in the downlink pilot time slots in each frame pair, the apparatus comprising “a transmit diversity detector for storing a plurality of first patterns each comprised of a plurality of different first phase modulation angles to indicate enablement of the transmit diversity, storing a plurality of second patterns each comprised of a plurality of different second phase modulation angles to indicate nonenablement of the transmit diversity, said second patterns being different from first patterns, and determining use/nonuse of the transmit diversity by comparing the phase modulation angles searched by the phase demodulator with the first and second phase modulation angles of the first and second patterns,” in combination with other limitations, as specified in the independent claim 27.

Regarding claim 28, the prior art fails to teach or suggest a method for determining enablement/nonenablement of transmit diversity in a CDMA mobile communication system, wherein a plurality of frames constituting a multiframe each include two subframes, each of said subframes including (i) a plurality of time slots each having data symbol fields scrambled with a given scrambling code and a midamble field indicating the given scrambling code, and (ii) a downlink pilot time slot having a synchronization code, intervening between first and second time slots of said plurality of time slots, wherein two adjacent frames make a frame pair, the method determining enablement/nonenablement of transmit diversity depending on phase modulation

angles of the synchronization codes in the downlink pilot time slots in each frame pair, the method comprising the steps of “storing a plurality of first patterns each comprised of a plurality of different first phase modulation angles to indicate enablement of the transmit diversity, storing a plurality of second patterns each comprised of a plurality of different second phase modulation angles to indicate nonenablement of the transmit diversity, said second patterns being different from first patterns, and determining use/nonuse of the transmit diversity by comparing the searched phase modulation angles with the first and second phase modulation angles of the first and second patterns,” in combination with other limitations, as specified in the independent claim 28.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee.. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuongchau Ba Nguyen whose telephone number is 571-272-3148. The examiner can normally be reached on Monday-Friday from 10:00 a.m. to 2:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on 571-272-3155. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2665

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Phuongchau Ba Nguyen
Examiner
Art Unit 2665

DUC HO
PRIMARY EXAMINER



4-1-05